

## Endocrinology and Metabolic Disorders

### Silibinin inhibit proliferation of acute myeloid leukemia cells and induce differentiation into monocyte

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**Background:** The main involved component of silymarin, a standardized extract of the milk thistle seeds is called Silibinin. *In vitro* anti-cancer impacts on human prostate adenocarcinoma cells, both small and nonsmall human lung carcinoma cells, human ectocervical carcinoma cells, estrogen-dependent and -independent human breast carcinoma cells, and also human colon cancer cells, silibinin has been indicated. Acute myeloid leukemia (AML) accounts for 15-20% of childhood leukemias. Though remission is achieved by following treatment with front-line chemotherapy, almost half of the patients are faced with disease relapse associated with chemo-resistance. Consequently, therapies that could maintain the remission phase in pediatric AML are urgently needed.

**Methods:** Cell viability and apoptosis were assessed through MTT assay and flow cytometry respectively. The activity of PKC was calculated by using a commercially kit and the protein levels of PKC isoforms were determined by western blotting. The differentiation of HL-60 cell to monocyte was estimated by the NBT reduction assay and morphologic studies.

**Findings:** In this study it was demonstrated that silibinin inhibits proliferation and induces apoptosis in AML cells in dose dependent manner. The issue that silibinin caused differentiation of HL-60 cells predominantly into monocytes is proved by cytofluorometric analysis and morphologic surveys. Silibinin improves protein levels of both PKCa and PKCb in HL-60 cells and protein kinase C (PKC) activity.

**Conclusion:** PKC and extracellular signal-regulated kinase (ERK) restrains significantly restrained HL-60 cell differentiation caused by silibinin, showing that PKC and ERK might be involved in silibinin-induced HL-60 cell differentiation. Finally silibinin could be a potent anticancer agent for targeting acute myeloid leukemias.

**Key words:** Silibinin, Leukemia, PKC, ERK, Apoptosis

### Assessment of hypocalcemia in febrile convulsion

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**Background:** Hypocalcemia is the most common electrolytic cause of seizure and febrile convulsion (FC) is a frequent cause of hospitalization in pediatric population. The aim of this study was to assess hypocalcemia in children hospitalized with febrile convulsion in Qazvin, Iran.

**Methods:** This cross sectional study was conducted on 515 children (less than five years old) with febrile convulsion

admitted at the Children hospital in Qazvin from March 2009 to March 2011. Age, personal and family history, temperature, symptoms and signs, duration and type of seizure, cause of fever, and the results of LP were recorded. Calcium and vitamin D levels were measured. Calcium level less than 8.2 mg/dl was defined as hypocalcemia. Data were analyzed using Mann-Whitney U test.

**Findings:** Mean age was 21.79±13.46 months. Of 515, 51.9% were female and 77 had complex febrile convulsion. Hypocalcemia was present in 45 (8.7%) of the patients. Of 45, 17.8% had vitamin D deficiency, 57.8% had vitamin D insufficiency, and 4.44% had hypoparathyroidism. Mean duration of seizure was 6.38 minute in children with hypocalcemia. The duration of seizure was significantly higher in children with hypocalcemia than children without hypocalcemia ( $P<0.001$ ). Age, temperature, type and number of seizures and length of hospitalization were not different between two groups.

**Conclusion:** Hypocalcemia was prevalent in children with febrile convulsion. Vitamin D deficiency was the most common cause of hypocalcemia. Vitamin D deficiency should be considered in the hypocalcemic FC work up.

**Keywords:** Febrile Convulsion, Hypocalcemia, Vitamin D Deficiency

### First Determination of N-Acetylgalactosamine-6-Sulfate Sulfatase Activity on Leukocytes of Iranian MPS IV-A Patients

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**Background:** Mucopolysaccharidosis type IV-A (Morquio A) is an inherited lysosomal storage disease caused by deficiency of N-acetylgalactosamine-6-sulfate sulfatase (GALNS). In the absence of the lysosomal enzyme, two major glycosaminoglycans (GAGs) such as keratan sulfate and chondroitin-6-sulfate are accumulated in the lysosomes leading to a tissue and organ dysfunctions. Skeletal and joint deformities, visual and auditory impairment, and tooth enamel defect, are common signs and symptoms of the disease. Cognitive and mental developments are normal. From February 2014, treatment of MPS IVA with enzyme replacement therapy (VIMIZIM™, elosulfase alfa, BioMarin) was approved, being crucial an accurate and early diagnosis of the disorder to prevent long term damage and effectiveness of therapy.

Laboratory diagnosis of MPS IV-A includes qualitatively or quantitative determination of elevated GAGs in urine, measuring of GALNS activity and molecular study of defected gene. For the first time in IRAN, we set up a previously described protocol for testing GALNS activity